Amendments to the Specification:

Please replace the paragraph at page 6, line 6, with the following amended paragraph:

In one such embodiment, the optical property includes the magnitude of the angle-dependence of the complex ~~reflexity~~ reflectivity of the test sample, and the determination of the thickness of the thin film is based on comparing the magnitude of the angle-dependence of the complex ~~reflexity~~ reflectivity to that of the model. Furthemore, the embodiment may include determining a surface height profile for the test object based on the comparison. For example, the optical property may further include the phase of the angle-dependence of the complex ~~reflexity~~ reflectivity of the test sample, and the determination of the surface height profile is based on the determined thickness of the thin film and comparing the phase of the angle-dependence of the complex ~~reflexity~~ reflectivity to that of the model for the determined thickness.

Please replace the paragraph at page 18, line 4, with the following amended paragraph:

In further embodiments of the invention, the scanning interferometry system may used to determine angle-dependent scattering or diffraction information about a test sample, i.e., for scatterometry. For example, the scanning interferometry system may be used to illuminate a test sample with test light incident over only a very narrow range of incident angles (e.g., substantially normal incidence or otherwise collimated), which may then be scattered or diffracted by the test sample. The light emerging from the sample is imaged to a camera to interfere with reference light as described above. As with the reflected light in the embodiments described above, the spatial frequency of each component in the scanning interferometry signal will depend vary with angle of the test

light emerging from the test sample. For substantially normal incidence, the spatial frequency varies according to:

$$K(\phi) = \frac{2\pi}{\lambda}\cos(\phi) \qquad (12),$$

which differs from Eq. (4) be a factor of 2 because of the normal incidence. The other parts of the mathematical analysis remain unchanged, however, and the scanning interferometry data $I(\zeta, h)$ from a scattering or diffractive test sample can be analyzed according to Eqs. (7)-(10) to provide the angle-dependent, phase and amplitude scattering/diffraction coefficients for the test sample. Thus, a vertical scan (i.e., a scan along the optical axis of an objective) followed by Fourier analysis allows for a measurement of diffracted and/or scattered light as a function of emerging angle, without directly accessing or imaging the back focal plane of the objective. Moreover, as above, the angle-dependence of such optical properties can be determined locally over an area of the test sample based on the resolution of the imaging system and the camera pixel size. To provide the substantially normal incidence illumination, for example, the source module can be configured to image a point source onto the pupil plane or to otherwise decrease the degree to which the illumination light fills the numerical aperature of the measurement objective. The scatterometry technique may be useful for resolving discrete structures in the sample surface, such as grating lines, edges, or general surface roughness, which may diffract and/or scatter light to higher angles.